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OFFSHORE WINDS FROM ADVANCED SYNTHETIC APERTURE RADAR

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Onboard the European Space Agency (ESA) satellite Envisat the Advanced Synthetic Aperture Radar (ASAR) mainly observes in wide swath mode, i.e. with a swath of 400 km along the polar orbit track. Routine download of data and online calculation to offshore wind maps are done by Risoe using the ANSWRS software from the Johns Hopkins University, Applied Physics Laboratory, USA. Offshore wind resource statistics are investigated for the Danish Seas. The results are compared to model results and offshore observations.

The approach of offshore wind mapping using ASAR data from the Envisat satellite is to download the raw data in near-real-time, calibrate the data and apply a CMOD function using a priori wind direction as input. The a priori wind direction is taken from the NOGAPS atmospheric model. The relevance of using is a series of offshore wind maps is to estimate the offshore wind climatology. It is innovative to use satellite information and it forms an alternative to offshore meteorological observation, however, only with accuracy adequate in pre-feasibility but not for wind farm siting as stand alone application. The results from the Danish Seas are presented by comparing to state of the art wind resource model results and offshore observations. The conclusion is that satellite ASAR provide a relevant regional offshore wind mapping capability for pre-feasibility. In addition, the data appear highly relevant for evaluation of offshore wind results from meso-scale modelling.